

Morning Brainstorm:

Dry cooled power plant efficiency \geq
wet cooled power plant efficiency



Objective

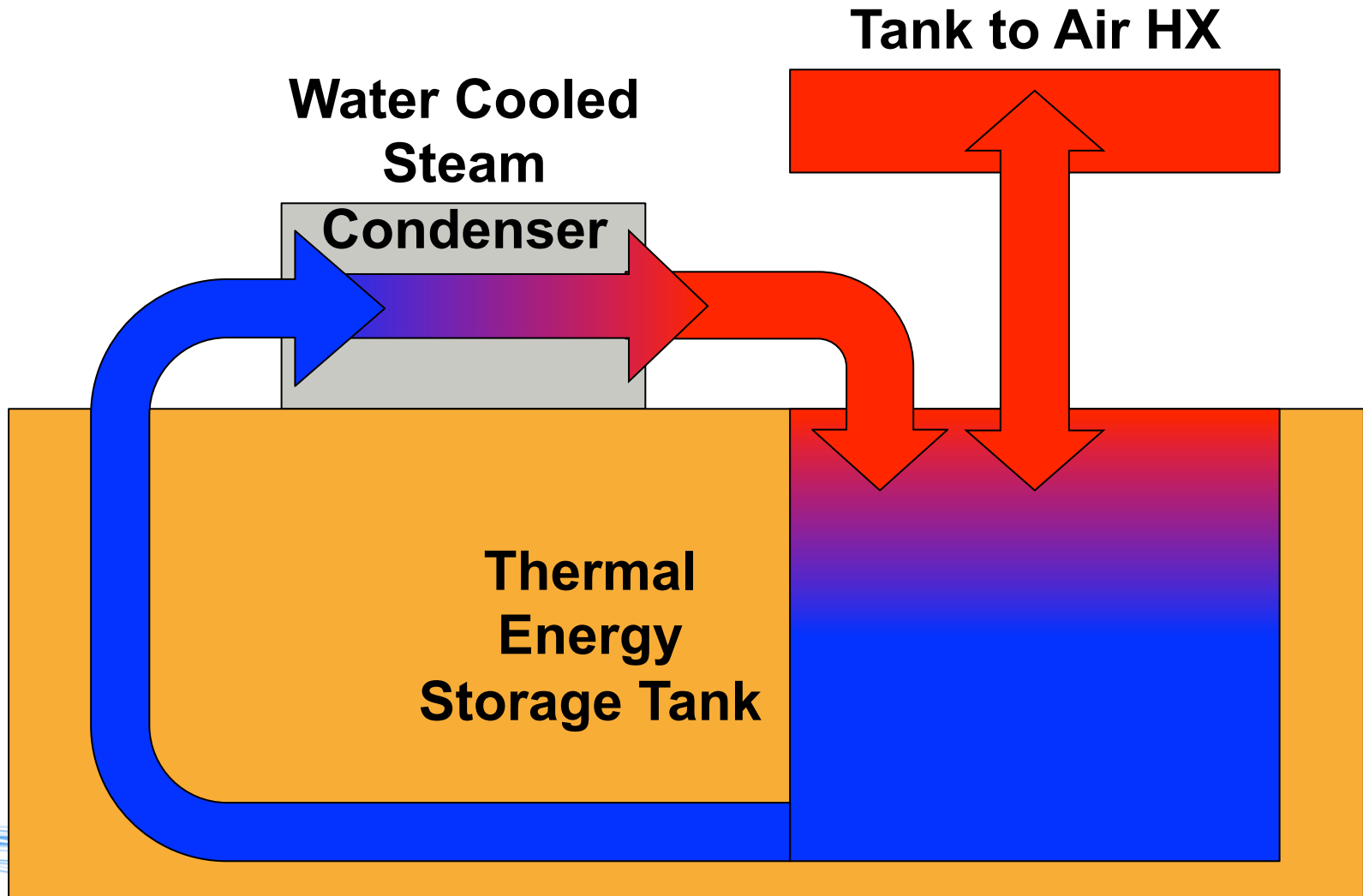
Identify

- Key challenges & needs
- Transformational technological approaches
- Technical and economic metrics
- Innovative concepts, geometries / topologies, materials, manufacturing processes

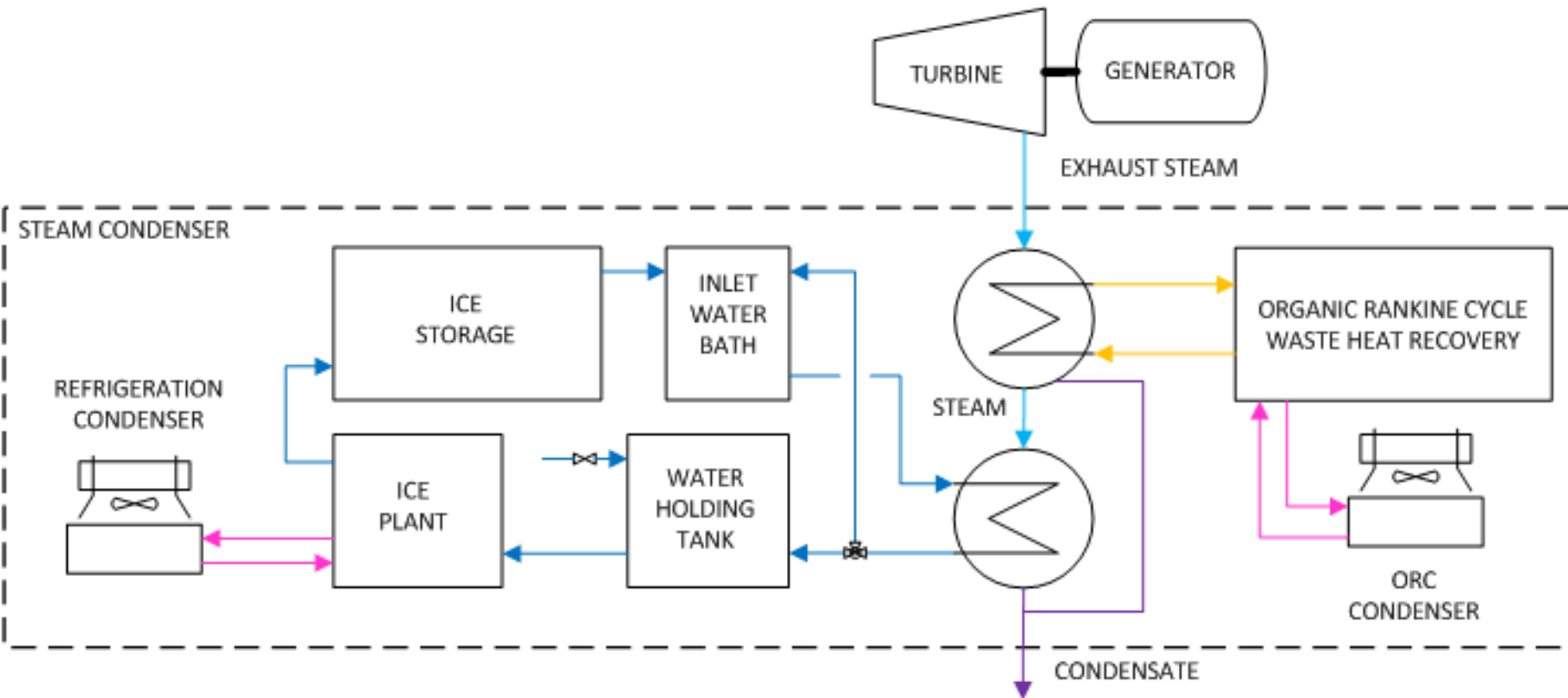


Group Introductions

Dry Cooled Power Plant with Thermal Storage



Incorporate Ice Plant Into Power Plant



What approaches are there for incorporating thermal storage into new power plants?

Can any be done as a retrofit?



For cooling steam condensers, are there any thermal storage materials that might be better than water?

Mud?



Would it make sense to change the to-air heat exchanger design for cooling a thermal storage tank instead of directly condensing steam?

If so, how?



Are there ways to make cheap ~100m underground water tanks?

Are there ways to make cheap ~100m above ground water tanks?

Are there ways to make tank walls and floor in-situ?



What approaches are there for incorporating ice making into new power plants?

Can any be done as a retrofit?



Are there other phase change materials that would work better?

An alkane like icosane?



What advances in the last 10 years might make this goal achievable now? Why?



Metrics

- Impactful if met
- Technically audacious
- Potentially achievable



What program metrics would likely produce a successful project in 3 years, such that it would be accepted and deployed in 15-10 years?



What can be done with \$3-4M in 2-3 yrs?

What can be done with \$0.5M in 1yr?



Agenda

Start	End	Activity
8:00	8:15	Registration & Breakfast
8:15	8:30	Welcome & Opening Remarks – Nicholas Cizek, ARPA-E
8:30	8:50	Power Plant Cooling – Olivier Le Galudec, Alstom
8:50	9:10	Dry Power Plant Cooling State of the Art – John Maulbetsch, Maulbetsch Consulting
9:10	9:30	Electronics Cooling State of the Art – Howard Davidson, Consultant
9:30	9:45	BREAK
9:45	11:45	Brainstorm – Technologies Enabling Dry Cooled Power Plants with Wet Cooled Power Plant Efficiencies or Better
11:45	12:45	Lunch & Review Morning Brainstorm
12:45	2:45	Brainstorm – Dissipating GW-scale Low-grade (35° C) Heat to Air Without Evaporating Water or Raising Surface Water Temperature
2:45	3:00	BREAK
3:00	3:30	Review Afternoon Brainstorm & Wrap-Up